

TELEPHONE WITH ELECTRONIC MAIL MANAGEMENT FUNCTION,
ELECTRONIC MAIL MANAGEMENT METHOD, AND STORAGE MEDIUM
STORING ELECTRONIC MAIL MANAGEMENT PROGRAM

BACKGROUND OF THE INVENTION

5 1.FIELD OF THE INVENTION

The present invention relates to an effective technique to be applied to management for transmission-reception of electronic mail (E-mail) in Internet or in a personal computer communication.

10 E-mail is generally used as a communication tool for business or private use. It is general that such a E-mail is transmitted-received by using each computer connected to LAN in a company or by connecting a personal computer with a telephone line for dial-up
15 connection to a provider for private use.

A business person, who goes out many times, uses often plural kinds of electronic information devices in order to transmit-receive E-mails in any environment for transmitting-receiving E-mail, for example, a desk-top
20 personal computer in an office, a personal digital assistants when going out and a notebook personal computer at a home.

However, when one person uses plural electronic

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information devices in order to transmit-receive E-mails
in this way, it is difficult to manage E-mails
integratedly. Therefore, for example, there are cases in
that an E-mail is down-loaded twice or more and a needed
5 E-mail is down-loaded by another electronic information
device, hereby incapable of being used.

To give further concrete explanations of this
problem, a prior art is explained with reference to
FIG.1.

10 FIG. 1 is an explanatory view showing conventional
E-mail management.

In this explanation, an user uses three terminal
devices. Explanations are given of a case in that the
user uses three terminal devices 101, 102, 103 and E-
15 mails are transmitted-received via a provider server 104
and a telephone line 106.

It is assumed that the user chooses the device 101
such as a portable digital assistant carried when going
out, the device 102 such as a notebook personal computer
20 used when moving through rooms, and the device 103 such
as desk-top personal computer used by fixing at a
location. All of the devices are respectively provided
with memories, and it is possible to store down-loaded

E-mails in each of memories.

The user, when down-loading an E-mail arriving at the provider server 104, calls the provider server 104 via the telephone line 106 from one of the devices 101, 102 or 103 held at that time, and receives the E-mail by the device 101, 102 or 103 of which an address is given as a dial-up IP in the E-mail. Further, the E-mail in the provider server 104 after receiving may be deleted or stored.

10 It is assumed that the user, when accessing the provider server 104, down-loads an E-mail 104 in the provider server 104 with the device 101, and then deletes the E-mail 104a from the provider server 104. After this, through the user is necessary to refer or
15 use the E-mail 104a while using the device 202, there is no information of the E-mail 104a in the memory of the device 202. In other words, the E-mail 104a exists only in the memory of the device 101, therefore, the user can not refer the E-mail 104a when not keeping the device
20 101 at hand.

To prevent such a case, it is necessary to remain the E-mail 104a without deleting the E-mail 104a from the provider server 104 after down-loading the E-mail

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104a with one of the devices (101, 102 or 103) in order to keep a situation in that the E-mail 104a can be used again.

However, in this use style, enormous E-mail
5 information will remain in the memory of the provider server 104, and a large quantity of already-read E-mails obstructs to receive a new E-mail. As a result, there is a possibility in that E-mail management is directly obstructed in the provider server 104.

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SUMMARY OF THE INVENTION

The present invention is achieved in views of these problems, and has its object to provide a technique capable of managing E-mails effectively without imposing a burden on the provider server by an environment
15 capable of managing E-mails integratedly even if an E-mail is deleted after being down-loaded from an provider server.

The first aspect of the present invention is a telephone with an electronic mail managing function. The
20 telephone is capable of connecting with at least a mail server and a plurality of terminal devices, and is provided with an access unit for accessing to the mail

server, a mail memory for storing an electronic mail
down-loaded from the mail server through the access
unit, a mail status memory for storing each status of
the electronic mail stored in the mail memory unit so as
5 to correspond to each of the terminal devices, and a
transmission unit for transmitting the electronic mail
stored in the mail memory to one of the terminal
devices.

When one person owns several terminal devices, the
10 telephone receives electronic mails integratedly from
the mail server (a provider server). It is possible to
refer and re-use unread and read mails with the terminal
device by accessing the telephone. Further, since the
mail status showing whether the E-mail is transmitted or
15 not is managed for each terminal device by the mail
status memory, it is possible to manage mails
integratedly by referring to the mail status memory.
Thus, it is possible to prevent to mis-delete an
electronic mail and to store unnecessary electronic
20 mails.

The second aspect of the present invention carries
out to store whether or not the electronic mail is down-
loaded to each of the terminal devices in the first

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aspect.

With this second aspect, it is possible to know that the electronic mail is loaded to which terminal device, and it is possible to prevent to mis-delete an
5 electronic mail certainly.

The third aspect of the present invention is provided with a process table for storing a process to be applied to the electronic mail after down-loading for each of the terminal devices in addition to the first
10 aspect.

The process to be applied to the electronic mail after down-loading includes to delete the electronic mail and to keep the electronic mail.

For example, it may be set that an electronic mail
15 at the telephone side is deleted when the electronic mail is down-loaded to a specified terminal device. In this way, when an terminal device finally managing electronic mails is specified, it becomes certain to manage electronic mails integratedly.

20 The fourth aspect of the present invention is provided with an emergency process unit for judging whether or not a priority process is necessary based on the electronic mail received from each of the terminal

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devices and for executing an access to the mail server when the priority process is executed in addition to the first aspect.

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A flag showing a priority or the like is used,
5 whereby it is possible to determine a priority of that the telephone deals with the electronic mail transmitted from the terminal device. Accordingly, for example, when the telephone receives an electronic mail in which an emergency process flag is set, this electronic mail is
10 transmitted to the mail server promptly. When no priority is set in an electronic mail, this electronic mail is transmitted to the mail server from the telephone at a time for the access to the mail server, the time specified by a timer.

15 The fifth aspect of the present invention is provided with an identifier memory for storing an identifier of an terminal device to be connected in addition to the first aspect. In this aspect, it is permitted to access from the terminal device of which an
20 identifier coincides with the stored identifier.

With the fifth aspect, it is possible to improve security of the telephone dealing with electronic mails.

The sixth aspect of the present invention is a mail

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The seventh aspect is a storage medium storing a program carrying out the steps of the sixth aspect. As storage media, it is possible to use all types of storage media capable of storing program such as CD-ROM, CD-R, a memory card based on PCMCIA, a magnetic disk unit. When a memory card is used, a memory card storing this program is attached to a multi-function telephone, whereby it is possible to carry out a telephone with the mail managing function described in the first aspect.

Other objects and advantages of the present invention will become apparent during the following discussion in conjunction with the accompanying drawings, in which:

20 FIG. 2 is a view showing of a system configuration
of an embodiment according to the present invention;

FIG. 3 is a block diagram showing a hardware

configuration of a telephone in an embodiment;

FIG. 4 is a block diagram showing a hardware configuration of a sub-device in an embodiment;

FIG. 5 is a explanatory view showing a mail status table in an embodiment;

FIG. 6 is an explanatory view showing a mail status table in an embodiment

FIG. 7 is an explanatory view showing a mail status table in an embodiment;

FIG. 8 is an explanatory view showing a process table in an embodiment;

FIG. 9 is a flowchart showing a procedure in that a telephone accesses a provider server and deals with E-mail in an embodiment; and

FIG. 10 is a flowchart showing a procedure in that an terminal device accesses a telephone and deals with E-mail in an embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Hereinafter, explanations will be given of an embodiment according to the present invention with reference to drawings.

FIG. 2 shows a system configuration of an

embodiment according to the present invention.

This system shown in FIG. 2 has a function in that
a telephone 201 manages a E-mail 104b in the provider
server 104 integratedly. A detail description will be
5 given of this telephone 201.

It is assumed that one user uses three terminal
devices (including electronic devices and information
devices) similarly to the prior art shown in FIG 1. The
user uses the devices 101, 102 and 103, so as to
10 transmit-receive a E-mail via the provider server 104
and the telephone line 106.

For example, it is assumed that the user chooses
the device 101 such as a portable digital assistant to
be carried when going out, the device 102 such as a
15 notebook personal computer used when moving through
rooms, or a device 103 such as a desk-top personal
computer to be used at a fixed position. Each of these
devices is provided with a memory, and it is possible to
store the down-loaded E-mail in the memory.

20 Next, explanations will be given of a configuration
of the telephone 201 according to this embodiment with
reference to FIGs. 2 and 3.

The telephone ²⁰¹~~102~~ is provided with a telephone line

connecting part 301, a line signal processing part 302,
a receiver 303, a process controlling part 304, a memory
305, a infrared communicating part 306, a display 307, a
voice synthesizing part 308, a speaker 309, a timer 310,
5 radio communicating part 311, an antenna 312, a button
switch 313, and a power source 314.

The telephone line connecting part 301 is used to
connect with a connector cable of a public line (a
digital line or an analog line), and is shown as a
10 modular jack in FIG. 2.

The signal processing part 302 controls
input-output of this telephone 201. The receiver 303 is
shown as a hand set having an earpiece and a mouthpiece
in FIG. 2. The process controlling part 304 is a CPU
15 controlling reception of E-mail and the memory 305. The
memory 305 is a nonvolatile memory, dynamic RAM or the
like, and stores programs such an access program to the
provider server 104, the E-mail 104b down-loaded from
the provider server 104, and the like. The memory 305
20 can also store voice data such as a message. The memory
305 also keeps an ID of an terminal device capable of
communicating with this telephone 201. The process
controlling part 304 reads the ID stored in the memory

305 in order to judge whether or not the terminal device 103 communicating with the infrared communication part 306 is permitted for data communication.

Further, the memory 305 is provided with a mail state table 501 shown in FIGs. 5 through 7. The mail status table 501 show that the E-mail stored in the memory 305 is transmitted to which terminal device. FIG. 5 shows that the E-mail 104b is already transmitted to the terminal device 101, and is not yet transmitted to the terminal devices 102 and 103. FIG. 6 shows that the E-mail 104b is already transmitted to the terminal devices 101 and 102, and is not yet transmitted to the terminal device 103.

FIG. 7 shows that the E-mail 104b is already transmitted to all the terminal devices 101, 102 and 103.

The infrared communicating part 306 is a port communicating with the external terminal device 103 or the like. The display 307 is a liquid crystal display or the like, and displays information such as a extension number, a transmitted outside line number, and a receiving telephone number when the telephone 201 is used normally. In this embodiment, the display 307

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displays that an E-mail is received from the provider server 104.

In the memory 305, a process table 801 shown in FIG. 8 is established. The process table 801 shows a process after the E-mail stored in the memory 305 of the telephone 201 is transmitted to each terminal device. In other words, it is possible to set whether or not the transmitted E-mail is stored in the memory or deleted. FIG. 8 shows a sample in that E-mail data is stored in the memory 305 when the E-mail is transmitted to the terminal devices 101 and 102 and a E-mail is deleted when the E-mail is transmitted to the terminal device 103. This is suitable to a case in that the user can read the E-mail with the terminal devices 101 and 102 while managing the E-mail only with the terminal device 103.

It is also possible to delete an E-mail in the memory 305 directly by an instruction from the user, regardless of contents in the process table 801.

The voice synthesizing part 308 executes voice synthesis so as to read a received E-mail aloud. The voice synthesizing part 308 converts a character code of the E-mail read from the memory 305 into a voice signal,

and outputs contents of the E-mail as voice information through the speaker 309.

The timer 310 executes an automatic access to the provider server 104 regularly, namely, a so-called timer
5 access. In other words, the timer 310 generates a trigger signal at a predetermined interval or at a predetermined time, and an interrupt instruction is given to the process controlling part 304. Then, the access program stored in the storage 305 starts, and the
10 telephone 201 starts an access to the provider server 104. Thereafter, the E-mail 104b in the provider server 104 is down-loaded.

The radio communicating part 311 is capable of communicating with the sub-device 202 or the terminal
15 devices 101, 102 and 103 by the radio signal through the antenna 312.

The button switch 313 includes a ten-key group used to input a calling number, and an alphabet key group or a kana key group used to input characters.

20 FIG. 4 is a block diagram showing an internal function structure of the sub-device 202 when the telephone is used as a main-device.

The sub-device 202, as shown in FIG. 4, is provided

The process controlling part 415 is a CPU
controlling the reception/transmission of the E-mail and
controlling the memory 416.

Additionally, the sub-device 202 is capable of accessing the provider server 104 by radio communication through the telephone 201, which is the main-device. When the sub-device 202 accesses the provider server 104, the E-mail down-loaded from the provider server 104 may be stored in the memory 305 of the telephone 201 which is the main-device or may be stored in the memory 416 of the sub-device 202.

The infrared communicating part 417 is a port communicating with the external terminal device 103 or the like. The receiver 418 is provided with a mouthpiece and an earpiece.

5 The battery 419 supplies an actuation voltage to the sub-device 202, and is a dry battery or a charged battery.

10 The radio communicating part 420 is capable of communicating with the telephone 201 and the terminal devices 101, 102, 103 by a radio signal through the antenna 421.

15 The button switch 422 is provided with a ten-key group used to input a calling number, and an alphabet key group or a kana key group used to input characters.

20 Explanations will be given of the management procedure by the above-described system with reference to FIGs. 9 and 10.

 In this embodiment, explanations will be given of a case in that E-mail data is communicated between the telephone 201 as a main device and the terminal device 103. Then, no explanation will be given of a case in that E-mail data is communicated between the sub-device 202 and the terminal device 103, since this case is

similar to the above-mentioned case.

First, it is assumed that an E-mail 104b addressed to an user is received by the provider server 104.

The telephone 201 accesses to the provider server
5 104 through the telephone line 106, when it is time designated by an instruction from the timer (Step S901).

The telephone 201, when being connected with the provider server 104, checks whether or not a mail addressed to itself arrives at the provider server 104
10 (Step S902). When the E-mail 104b arrives at the provider server 104, the E-mail 104b in the provider server 104 is down-loaded (Step S903), and stored in the memory 305 (Step S904).

Then, the display 307 displays that the down-loaded
15 E-mail 104b is stored in the memory 305, such as "there is a received mail". Further, the display 307 may display titles or contents of an unread mail (a mail downloaded to none of terminal devices) (Steps 908, 909). It is also possible to notify a destination shown
20 in the memory 305 that there is an E-mail.

When an E-mail 104b is stored, a status table concerning this E-mail 104b is established as shown in FIGs. 5 through 7.

Then, the process controlling part 304 of the telephone 201 determines whether there is a transmission mail (a mail to be transmitted) in the memory 305 or not (Step 905). When there is a transmission mail in the
5 memory 305, the process controlling part 304 transmits this transmission mail to the provider server 104 (Step 906) and finishes to access the provider server 104 (Step 907). The provider server 104 transmits this transmission mail to another server (not shown) based on
10 TCP/IP (Transmission Control Protocol / Internet Protocol).

Next, an explanation will be given of a case in that the E-mail 104b stored in the memory 305 of the telephone 201 is used from an external terminal device.

15 First, the terminal device 101 calls the telephone 201 through the telephone line 106 (Step 1001). Then, the E-mail 104b in the memory 305 is read by the data communication function of the telephone 201, namely, by the control of the process controlling part 304, and
20 this E-mail 104b is taken in the terminal device 101 through the telephone line 106. At this time, the process controlling part 304 compares an access ID transmitted from the terminal device 101 with an

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authorization ID stored in the memory 305 (Step 1002).

Then, it is checked whether or not there is an E-mail unread by the terminal device 101 by referring the mail status table 501 (Step 1003).

5 In this embodiment, since there is an unread E-mail 104b, this E-mail 104b is taken in the terminal device 101 (Step 1004).

 When the E-mail 104b in the telephone 201 is read by the terminal device in this way, the status table 501
10 is rewritten as shown in FIG. 5.

 Then, it is judged whether or not there is an E-mail transmitted to all of the terminal devices registered in the status table 501 (Step 1005). When there is such a E-mail in the status table, this E-mail
15 is deleted (Step 1006).

 Continuously, it is judged whether or not there is a transmission mail in the terminal device 101 (Step 1008). When there is a transmission mail (a mail to be transmitted), this transmission mail is transmitted to
20 the telephone 201 (Step 1009). The transmission mail from the terminal device 101 has an emergency flag at the header thereof. When the emergency flag stands, namely, the transmission mail is an emergency mail (Step

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1010), the telephone 201 receiving this emergency mail deals with this emergency mail by giving priority (Step 1012). In other words, when an emergency mail is received, this emergency mail is stored in the memory 5 305 once, and the telephone 201 accesses the provider server 104 so as to execute a process transmitting this emergency mail to the provider server 104.

The telephone 201, when being instructed by the terminal device so as to deal with a mail though this 10 mail is not an emergency mail (Step 1011), deals with this mail by giving priority.

The process controlling part 304 judges whether or not there is another unread mail (Step 1013). When there is another unread mail, the processes of the steps 1004 15 through 1014 are repeated. When there is no unread mail, the terminal device 101 finishes the access to the telephone 201 (Step 1014).

Next, an explanation will be given of a case in that the E-mail 104b in the telephone 201 is used with 20 another terminal device 102 or 103.

First, the terminal device 102 or 103 (the electronic equipment 103 in FIG. 2) is arranged at a position facing to the infrared communication part

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